

# Strategies for food Enhancement (Part - I)

- Ever increasing population <sup>necessity</sup> → Enhancement of food production of the world.
- Biological principles <sup>applies to</sup> → 

Animal husbandry

 } have major role in efforts in ↑ food production
- Plant breeding
- Several new techniques → 

Embryo transfer

 } pivotal role in enhancing food production
- Tissue culture

## ANIMAL HUSBANDRY

- Agricultural practise of 

breeding

 } Livestock
- raising

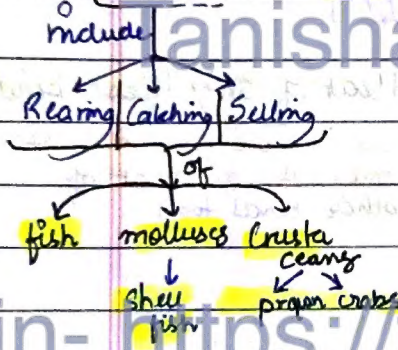
● Vital skill of farmer as much as it is science as it is art

- Animal Husbandry <sup>deals with</sup> → 

care

 } of livestock
- breeding
- extended to include
- Fisheries
- Farming
- Poultry

Buffalo cows pigs horse cattle sheep camel goat



Since time immemorial, animals like

bees silk worm prawns crabs fishes birds pigs cattle sheep camel

have been used by humans for products like

milk eggs meat wool silk honey

★ > 70% of livestock in India China <sup>contribution to world farm</sup> ≈ 25%

Newer technologies + Conventional practices of animal breeding & care → hence productivity per unit is very low

both needed to → improve → quality & productivity

## MANAGEMENT OF Farms & Farm Animals

★ A professional to → traditional practices of farm management } gives much needed boost to food production.

### DAIRY FARM MANAGEMENT

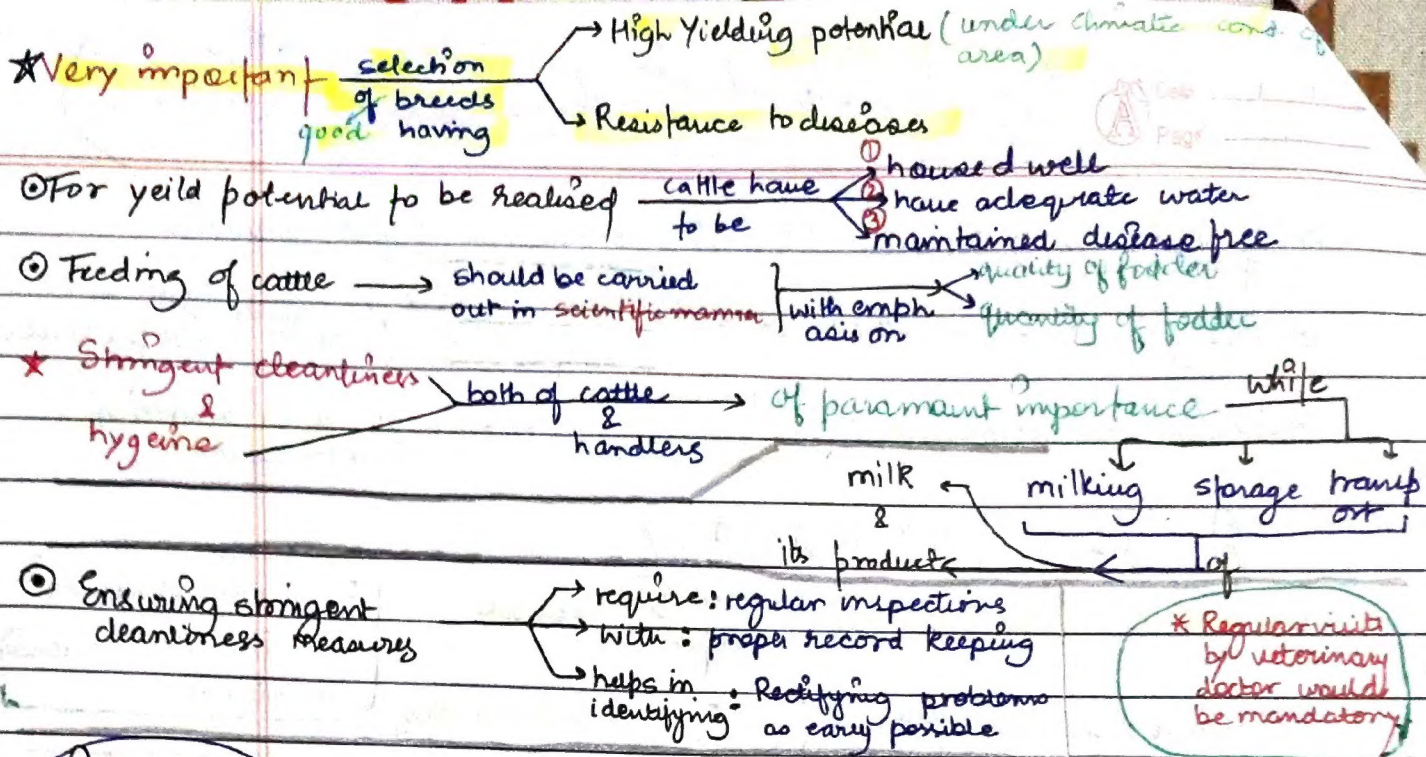
this we deal with

Dairying → management of animals for milk & its products } for Human consumption

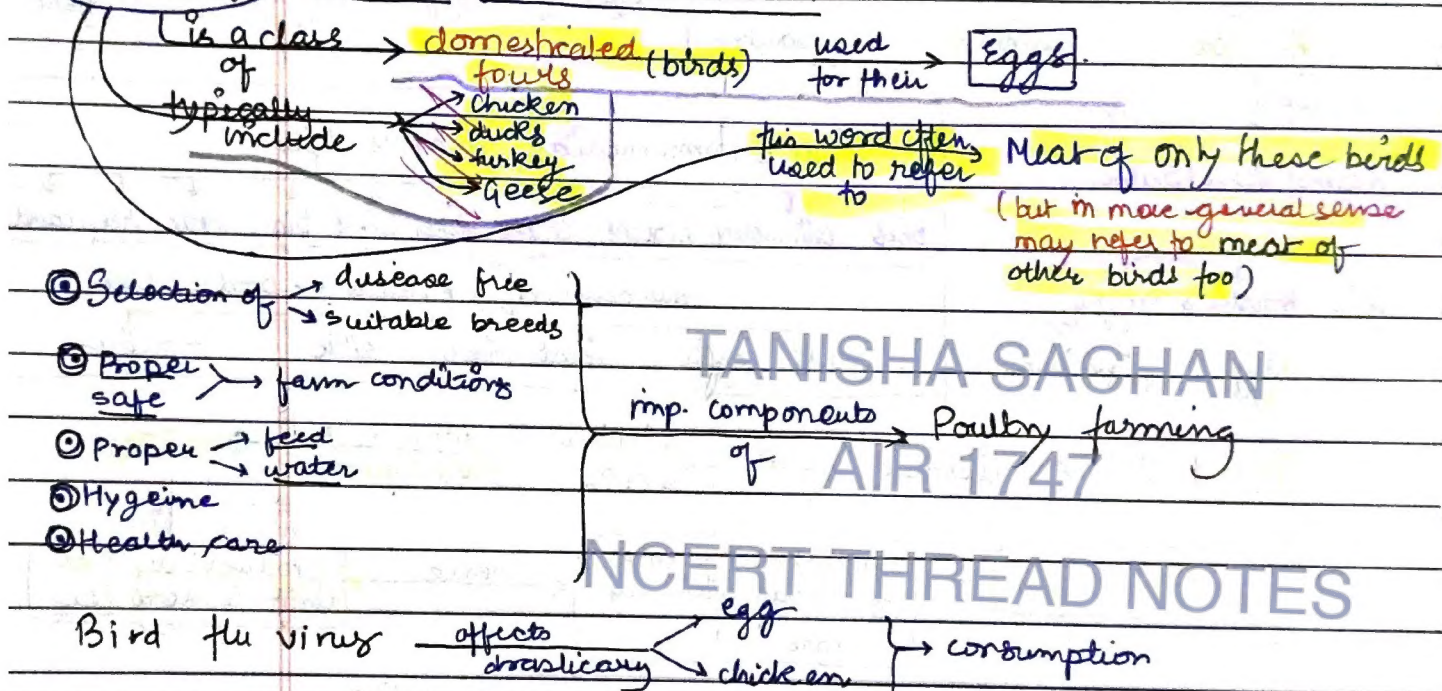
processes & systems that ↑ yield & improve quality of milk

Milk Yield primarily dependant on → Quality of breeds in the farm





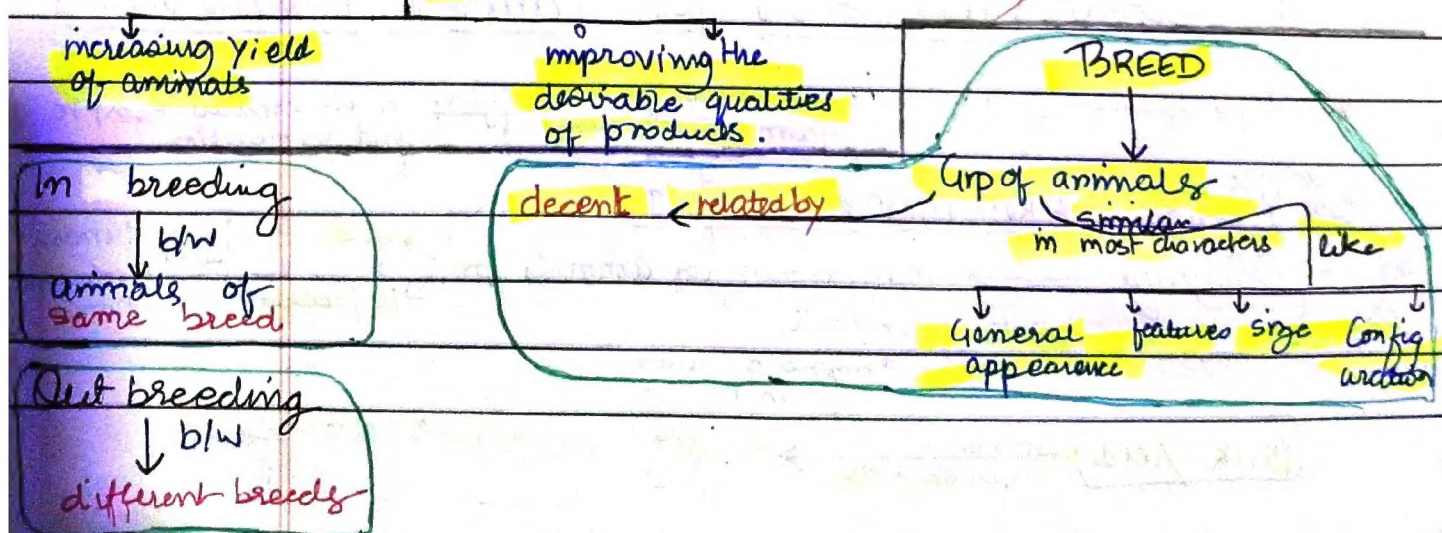
## POULTRY FARM MANAGEMENT



## ANIMAL BREEDING

aims at

important aspect of animal husbandry





Improved breed of  $\left\{ \begin{array}{l} \text{cattle} \rightarrow \text{Jersey} \\ \text{chickens} \rightarrow \text{Leghorn} \end{array} \right.$

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# Inbreeding

Mating of  
↓  
more closely related  
species within  
same breed  
for  
4-6 generations

Breeding strategy  
↓  
Superior male (of same breed) & Superior female  
↓  
mated  
↓  
Progeny evaluated & then superior ♂ & ♀ identified for further mating

Superior ♀  
in case of cattle  
↓ is Cow/buffalo  
↓ that produces milk/lactation per.  
Superior ♂  
Bull  
↓ which give rise to superior progeny than other males

\* Inbreeding ↑ homozygosity  
increasing it  
→ pure lines have to be evolved in any animals.

\* Inbreeding → exposes the harmful recessive genes that are eliminated by selection

\* Inbreeding helps in accumulation of superior genes & elimination of less desirable genes

# Out-breeding

Breeding of  
↓  
unrelated animals  
which may be

Out Crossing  
↓ b/w  
individuals of same breed but having no common ancestor for 4-6 generations

Offspring known as Out cross

\* Best breeding method  
↓  
for animals that are below avg in productivity of milk product. Growth rate in beef cattle

\* A single outcross helps to overcome inbreeding depression

Cross Breeding  
↓ b/w

different breeds  
Superior ♂ & ♀ of different breeds  
mated → allows

desirable qualities of 2 different breeds to combine

Progeny hybrids  
themselves used for commercial production. Subjected to some form of

Inbreeding & Selection  
to develop the new stable breeds  
↓  
superior to existing breeds

Eg. HISSARDALE  
• new breed of sheep  
• in Punjab developed.  
• Crossing  
Morino Rams & Bikaneri ewes

Interspecific hybridisation  
↓ b/w

different species  
2 animals of two different related species are mated

In some cases  
↓

Progeny combines desirable features of both parents.  
↓  
hence be considered of economic value

Eg. MULE

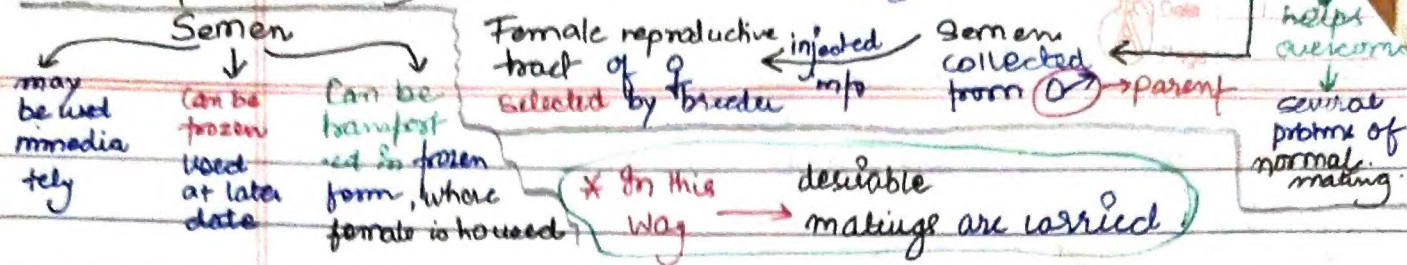
Selection at each step increases the productivity of inbred population

Continued inbreeding specially close inbreeding  
inbreeding depression ← called fertility & productivity → reduces

To restore fertility & yield → selected animal of breeding popula. should be mated with unrelated superior animals of same breed



Controlled breeding experiments are carried out using Artificial Insemination



Success Rate of Crossing -> { mature ♀ animals, mature ♂ animals } is fairly low

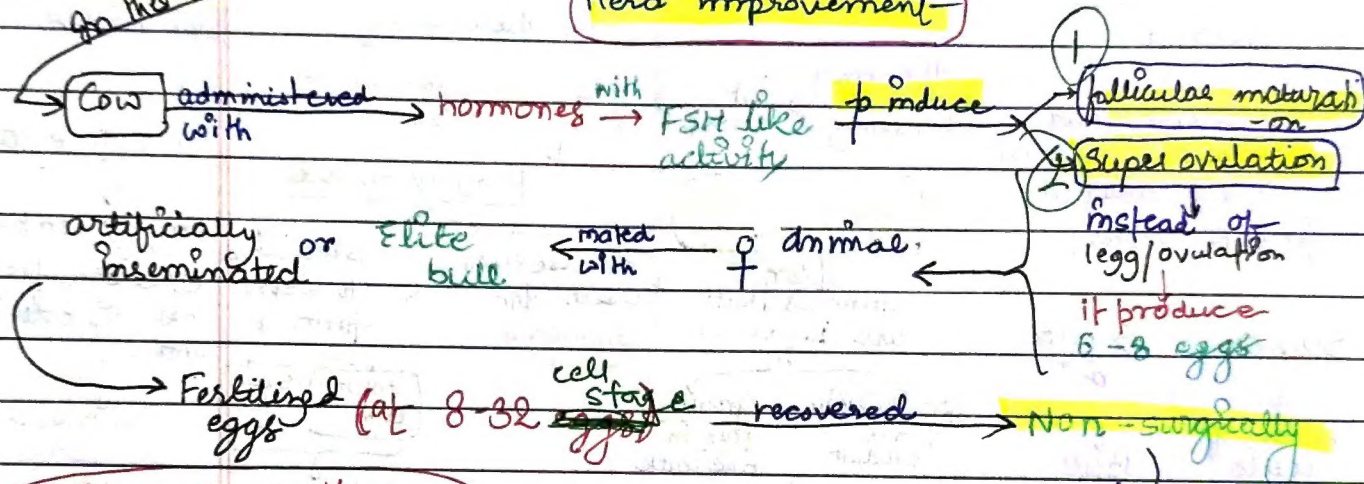
Artificial Insemination is carried out even though

To improve chances of successful prod. of hybrids.

MOET ~ Multiple Ovulation Embryo Transfer

In this method,

programme for Herd improvement



MOET has been demonstrated in rabbit, cattle, sheep, buffalo, mares

High milk yielding ♀ breeds

High quality meat yielding ♂ breeds (butts)

Lean meat with less lipid

bred success fully to -> ↑ herd size, ↓ in less time

# BEE KEEPING -> A P I C U L T U R E

Maintenance of lives of honeybee -> for prod. of honey

\* Old age cottage industry

Honey is food of -> High nutritive value, Indigenous system of medicine



honeybee produce Beeswax uses in industry → Cosmetics  
 → Polishes of various kinds.

Increased demand of honey led to Large scale bee keeping practises  
 it has become an established income generating industry  
 Large scale → what a practice in  
 Small scale →

★ Bee Keeping can be practised in Any area. where there are Sufficient bee pastures

★ Several species of honey bee can be reared  
 most common be (Apis indica)

Wild shrubs  
 Fruit orchards  
 Cultivated crops. of some

Beehives can be kept in one's courtyard, verandah or even the roof

★ BEE KEEPING → Labour intensive

→ though easy but requires some specialised knowledge

There are several organisations teach bee keeping

Points to remember for successful bee keeping

(i) Selection of suitable location for beehives

(ii) Knowledge of nature & habits of bees.

(iii) Catching & keeping of Swarms - Grip of bees.

(iv) Management of Beehives during different seasons

(v) Handling collection of honey & beeswax

Bees are Pollinators of many crop species

Sunflower, Brassica, Apple, Pear

★ Keeping beehives in crop fields during flowering period

↑ pollination efficiency  
 improves the yield

both benefit from crop yield & honey yield.

# FISHERIES

industry devoted to

Catching

Processing

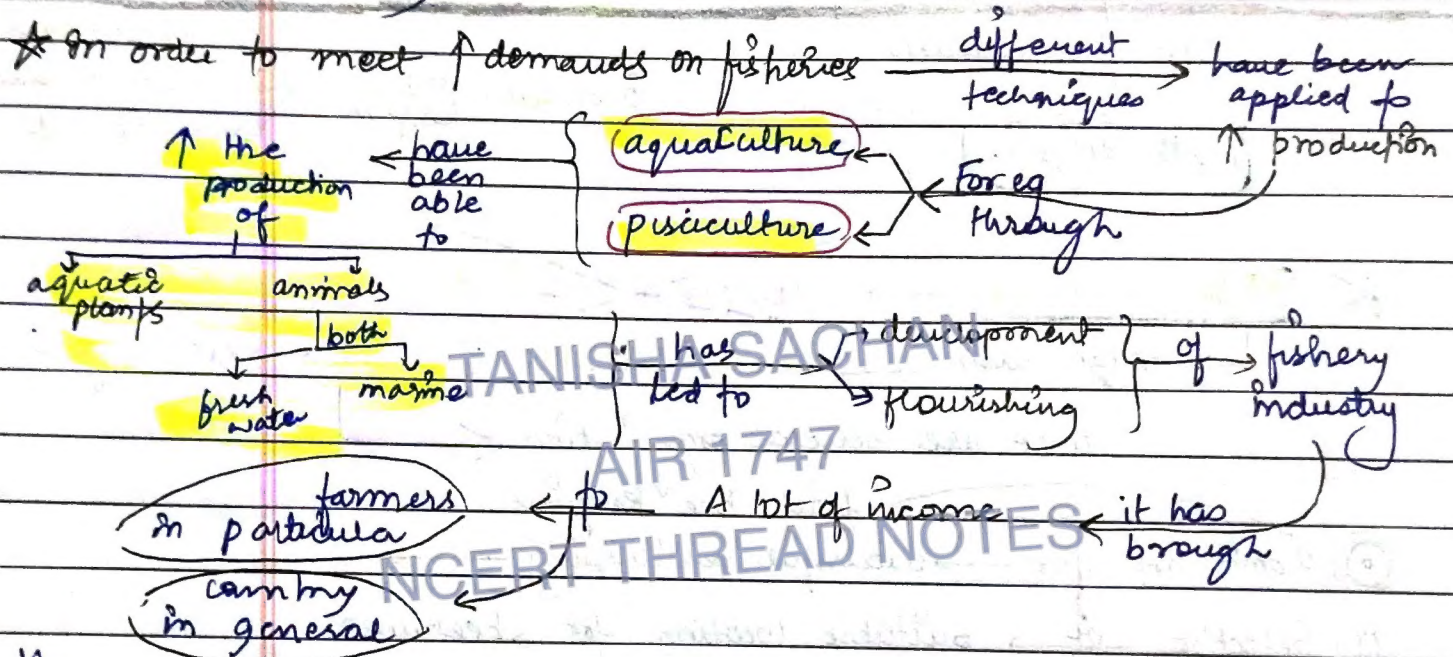
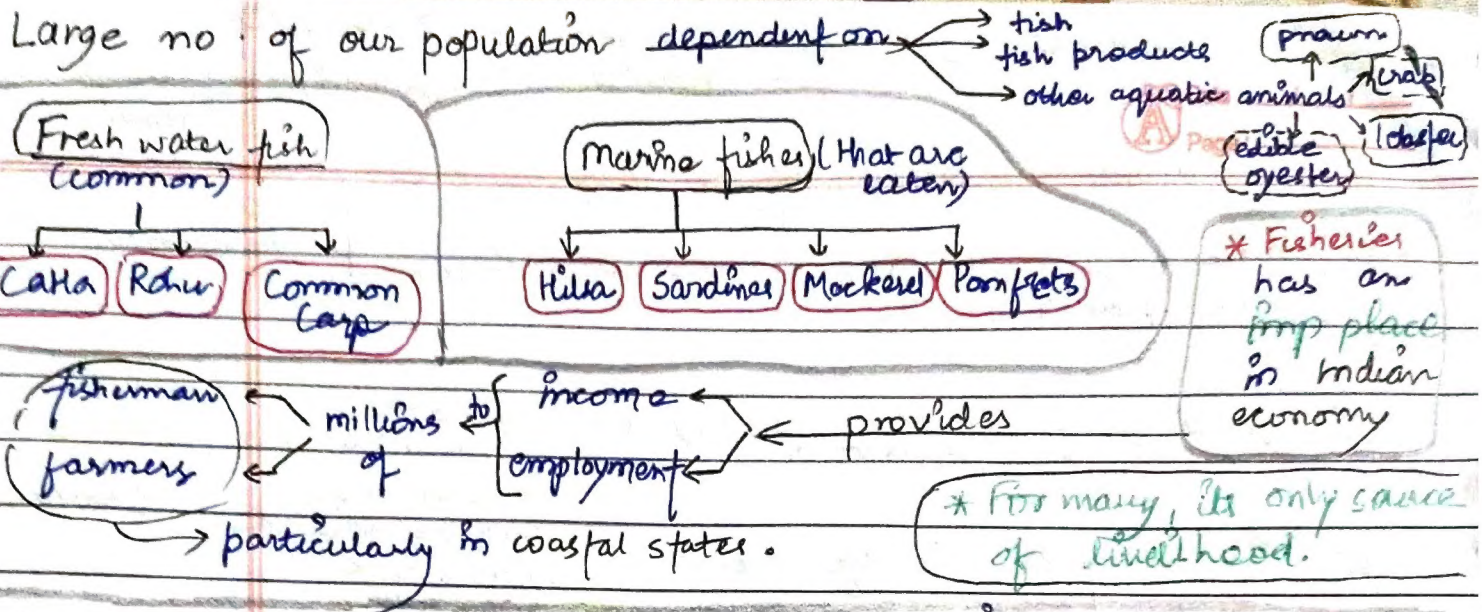
Selling

fish

Shellfish

Other aquatic animals





"BLUE REVOLUTION" along same lines as → Green Revolution

**Aquaculture** → Rearing, selling, catching of fishes & aquatic animals & aquatic plants, algae in salt water & fresh water

**Pisciculture** → Only fishes & crustaceans & aquatic animals involved (~~plants~~)